

### 3.3 Implementation of CSO Control Projects

This section presents an overview of King County's completed, current, and planned CSO control projects. Many early projects involved sewer separation, flow diversion, and new tunnels. Most current and future projects involve construction of storage and treatment facilities.

#### 3.3.1 Completed CSO Control and Associated Projects

Tables 3-1 and 3-2 summarize CSO control projects and other projects associated with CSO controls that have been completed to date.

**Table 3-1. Completed CSO Control Projects**

Project	Description	Completion Date	Status/Comments
Ft. Lawton Tunnel	Parallel tunnel to the West Point plant to provide greater transfer capacity.	1991	Completed.
Hanford/Bayview/ Lander Separation & Storage	Partial separation of the Lander and Hanford basins, and reactivation of the Bayview Tunnel. (Joint project with the City of Seattle.)	1992	Remaining control will occur under RWSP projects in 2017 (Hanford # 2), 2019 (Lander St.), and 2026 (Hanford at Rainier). Lander stormwater management is ongoing.
Carkeek Transfer/CSO Treatment	Transfer of flows up to 9.2 mgd from the Carkeek basin to the West Point plant. Treatment of flows above 9.2 mgd at the Carkeek CSO plant.	1994 & 2005	After completion of flow transfer project, the Carkeek plant was receiving more flow than anticipated. Upgrades were made in 2005 to the pumps that transfer flow to West Point to increase their capacity from 8.4 to 9.2 mgd. Also in 2005, the chlorine system at the plant was modified and a dechlorination system was added.
Kingdome Industrial Area Storage & Separation	Installation in 1994 of a storage pipeline in conjunction with Seattle and Washington State Department of Transportation street projects. Completion by the Public Facilities District in 1999 of 60 percent of the Level 1 sewer separation between Alaskan Way and 3rd Ave. in conjunction with Safeco Field construction.	1994 & 1999	Remaining control will occur in 2026 under an RWSP project (Kingdome/Connecticut CSO).
University Regulator Phase 1 and Densmore Drain	Separation of stormwater from northwest Seattle and parts of I-5, and diversion of Green Lake outflow away from the sewer to a new Densmore drain that discharges to north Lake Union.	1994 & 2007	Improvements to the hydraulics of the drain and upgrades to the Densmore pumps were completed spring 2007. Remaining control will occur in 2015 under an RWSP project (University/Montlake CSO).
Harbor Pipeline	Installation of a pipeline to convey overflow from the Harbor Avenue Regulator Station to the West	1996	Completed. The pipeline was put into operation in 2000–2001.

Project	Description	Completion Date	Status/Comments
Alki Transfer/CSO Treatment	Seattle Tunnel for storage. Transfer of flows up to 18.9 mgd from the Alki drainage basin to the West Point plant via the West Seattle Tunnel. Treatment of flows above 18.9 mgd at the Alki CSO plant.	1998, 1999, & 2005	In 1999, additional plant modifications were completed. In 2005, the chlorine system was modified and a dechlorination system was added.
63rd Ave. Pump Station	Diversion of overflows to the West Seattle Tunnel or Alki CSO plant.	1998	Completed.
Denny Way/Lake Union CSO Control Project	Storage and primary treatment of Lake Union flows in the Mercer Tunnel, with screening, disinfection, and discharge to Puget Sound at Elliott West.	2005	Major construction completed. See the discussion on satellite CSO treatment later in this chapter.
Henderson/MLK/Norfolk CSO Control Project	Storage, primary treatment, and disinfection of Henderson and Martin Luther King, Jr., flows in the Henderson Tunnel; transfer of flows to secondary treatment plants; discharge of excess treated CSOs at Norfolk.	2005	Major construction completed. See the discussion on satellite CSO treatment later in this chapter.

Table 3-2. Completed Associated Projects

Project	Description	Completion Date	Status
Renton Sludge Force Main Decommissioning	Stopped pumping sludge to the Elliott Bay Interceptor for conveyance to the West Point plant after South plant developed solids management capability; the decommissioning decreased solids discharge from the Interbay Pump Station at Denny during CSO events.	1988	Completed.
Ballinger and York Pump Stations	Construction of two new pump stations that can divert flows to and from the West Point collection system. Flows are currently diverted away from West Point during the wet season.	1992 (York); 1993 (Ballinger)	Completed.
West Point Treatment Plant Expansion	Increased plant hydraulic capacity from 325 to 440 mgd in order to convey and treat more flow from the combined sewer system.	1995	Completed.
Allentown Diversion/Southern Transfer	Designed to offset addition of Alki flows to the Elliott Bay Interceptor; resulted in significant volume reduction at Norfolk.	1995	Completed.
North Creek Pump Station	Diversion of flow away from the West Point to the South plant collection system during wet weather.	1999	Completed.

Project	Description	Completion Date	Status
Denny Way Sediment Remediation	Remediation in three phases of sediments in six areas: Phase 1 – cap an offshore area to remediate historical contamination. Phase 2 – dredge and fill two nearshore areas to remediate historical contamination. Phase 3 – remediate three offshore areas for historical contamination near existing outfalls.	Ongoing	Phase 1 completed in 1991; 10-year monitoring completed in 2001. Phase 2 completed in early 2008; 6-year monitoring began in 2008. Phase 3 action to be determined in 2014 based on Phase 2 monitoring. Ongoing monitoring for potential recontamination at outfalls for the completed Denny Way/Lake Union control project.
Norfolk Sediment Remediation <sup>a</sup>	Source control, dredging, and capping.	2005	Post-construction monitoring program was completed in 2007.
Duwamish/ Diagonal Sediment Remediation <sup>a</sup>	Source control, dredging, and capping.	2005; ongoing monitoring	A 10-year monitoring program to assess the potential for recontamination is in progress.

<sup>a</sup> These projects were done under the Elliott Bay/Duwamish Restoration Panel (EBDRP) under the consent decree to settle the 1990 litigation by National Oceanic and Atmospheric Administration (NOAA) against the City of Seattle and King County (then Metro) for natural resource damages attributed to CSOs and storm drains. These projects were identified as early action cleanups in the Lower Duwamish Waterway Superfund site.

### 3.3.2 CSO Control Projects Under Way

Four CSO control projects are under way: South Magnolia, North Beach, Barton Street, and Murray Avenue. These four projects are referred to collectively as the Puget Sound Beach projects.

In 2006, the formal planning and predesign phase of the projects began. Initial alternative screening criteria were developed and will be further refined based on community feedback. Community involvement meetings are being held in each of the four project basins. Public comments are being tracked and will be used to involve stakeholders in future community meetings (see Chapter 4).

Flow monitoring in the local Seattle sewer system will be conducted in each of the four basins to assess whether removing stormwater from these sewers is a viable option for CSO control. King County will explore the use of a low-impact development strategy (green infrastructure) as an alternative for CSO control in one of the basins. The most suitable basin will be identified in cooperation with the City of Seattle, and the feasibility and costs of the strategy will be assessed.

Predesign will continue through 2009 and end with issuance of facility plans in 2010. Construction is expected to begin in 2011 and to be completed by 2013. Because CSO control facilities run intermittently, a reasonable and effective commissioning period is needed before a facility is considered fully operational. Depending on the alternatives selected for these projects, the commissioning period is expected to extend at least into the following permit cycle.

More information can on Puget Sound Beach projects can be found at <http://dnr.metrokc.gov/wtd/projects/cso/index.htm>.

### 3.3.3 Future Projects

Table 3-3 lists the projects in the CSO control plan that will be completed in the future to bring all CSOs under control by 2030. These projects were identified in the RWSP. Five other projects that were in the RWSP are not listed because they are either under way (Puget Sound Beach projects) or have been eliminated because monitoring and modeling data indicate that they are already controlled (SW Alaska Street CSO). Alternatives analysis during project implementation may identify approaches other than those listed.

**Table 3-3. Planned CSO Projects in Order of Priority**

Project Name	DSN <sup>a</sup>	Project Description	Projected Year of Control	Water Body
University/Montlake	015/ 014	7.5 MG (million gallon) storage tank	2015	Lake Union/ East Ship Canal
Hanford #2	032	3.3 MG storage/treatment tank	2017	Duwamish River
West Point Treatment Plant Improvements		Primary/secondary enhancements	2018	Puget Sound
Lander Street	030	1.5 MG storage/treatment at Hanford	2019	Duwamish River
Michigan	039	2.2 MG storage/treatment tank	2022	Duwamish River
Brandon Street	041	0.8 MG storage/treatment tank	2022	Duwamish River
Chelan Avenue	036	4 MG storage tank	2024	Duwamish River
Connecticut Street (now called Kingdome)	029	2.1 MG storage/treatment tank	2026	Elliott Bay
King Street	028	Conveyance to Connecticut Street treatment	2026	Elliott Bay
Hanford at Rainier Avenue	031	0.6 MG storage tank	2026	Duwamish River
8th Avenue S	040	1.0 MG storage tank	2027	Duwamish River
West Michigan	042	Conveyance upgrade	2027	Duwamish River
Terminal 115	038	0.5 MG storage tank	2027	Duwamish River
3rd Avenue W	008	5.5 MG storage tank	2029	West Ship Canal
Ballard <sup>b</sup>	003	1.0 MG storage tank (40% King County)	2029	West Ship Canal
11th Avenue W <sup>c</sup>	004	2.0 MG storage tank	2030	West Ship Canal

<sup>a</sup> DSN refers to the Discharge Serial Number, an identifier set in the NPDES permit for an individual CSO location. See Chapter 2 for locations of CSOs.

<sup>b</sup> A CSO control project may not be needed at the Ballard Regulator Station because this location may be controlled as the result of replacing the Ballard Siphon, scheduled for completion in 2010.

<sup>c</sup> The scope of the control project at 11th Avenue West may be reduced as a result of replacing the Ballard Siphon.

Note: Alternative analysis and cost estimating for these projects were submitted to Ecology in the 1997 *King County CSO 5-Year Update, Task 4, Development of Alternatives* as part of the RWSP. It can be found at <http://dnr.metrokc.gov/wtd/cso/library/RWSP-CSO/Task4.pdf>. Documentation of the county's funding for these projects was submitted in the 1997 *RWSP Draft Financing Plan* (prepared by Gibson Economics, Inc.) and was updated in Chapter 13 of the 2006 *RWSP Comprehensive Review* (<http://dnr.metrokc.gov/wtd/rwsp/documents/06CompReviewAR/Ch13.pdf>).